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United States Patent [19]

Graber et al.

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[54] **METHOD AND APPARATUS FOR REDIRECTING A USER TO A NEW LOCATION ON THE WORLD WIDE WEB USING RELATIVE UNIVERSAL RESOURCE LOCATORS**

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[73] Assignee: **Infonautics Corporation**, Wayne, Pa.

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[52] **U.S. Cl.** **395/200.12**; 395/200.09; 395/200.16; 395/214; 395/762

[58] **Field of Search** ..... 395/200.06, 200.09, 395/200.11, 200.12, 200.15, 200.16, 214, 240, 244, 187.01, 741, 762, 615, 774; 340/825.34, 825.53; 380/23, 24, 25, 49; 379/118, 127, 142; 364/225.1, 225.4, 227.3, 286.5, 918.1, 918.9, DIG. 1, DIG. 2

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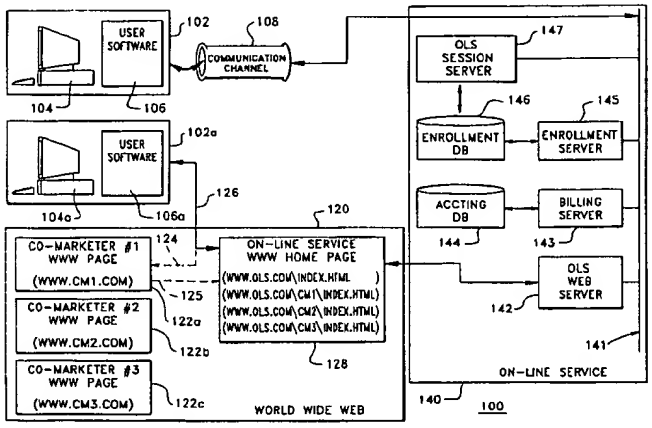
[57] **ABSTRACT**

A method and apparatus for redirecting a user from a first location on the WWW to a second location on the WWW, wherein relative URL addressing is used during the redirecting process. A signal is received from the first location indicating that the user wishes to move from the first location on the WWW to the second location on said WWW. In response to the signal, a current URL representing an address of the first location on the WWW and a destination URL portion representative of an address of the second location on the WWW are passed to a redirecting means. The current URL includes first and second portions. A destination URL is formed with redirecting means by substituting the destination URL portion in place of the second portion in the current URL, wherein the destination URL represents a relative address of the second location on the WWW. The user is then moved from the first location on the WWW to the second location on the WWW in accordance with the destination URL formed by the redirecting means.

12 Claims, 7 Drawing Sheets



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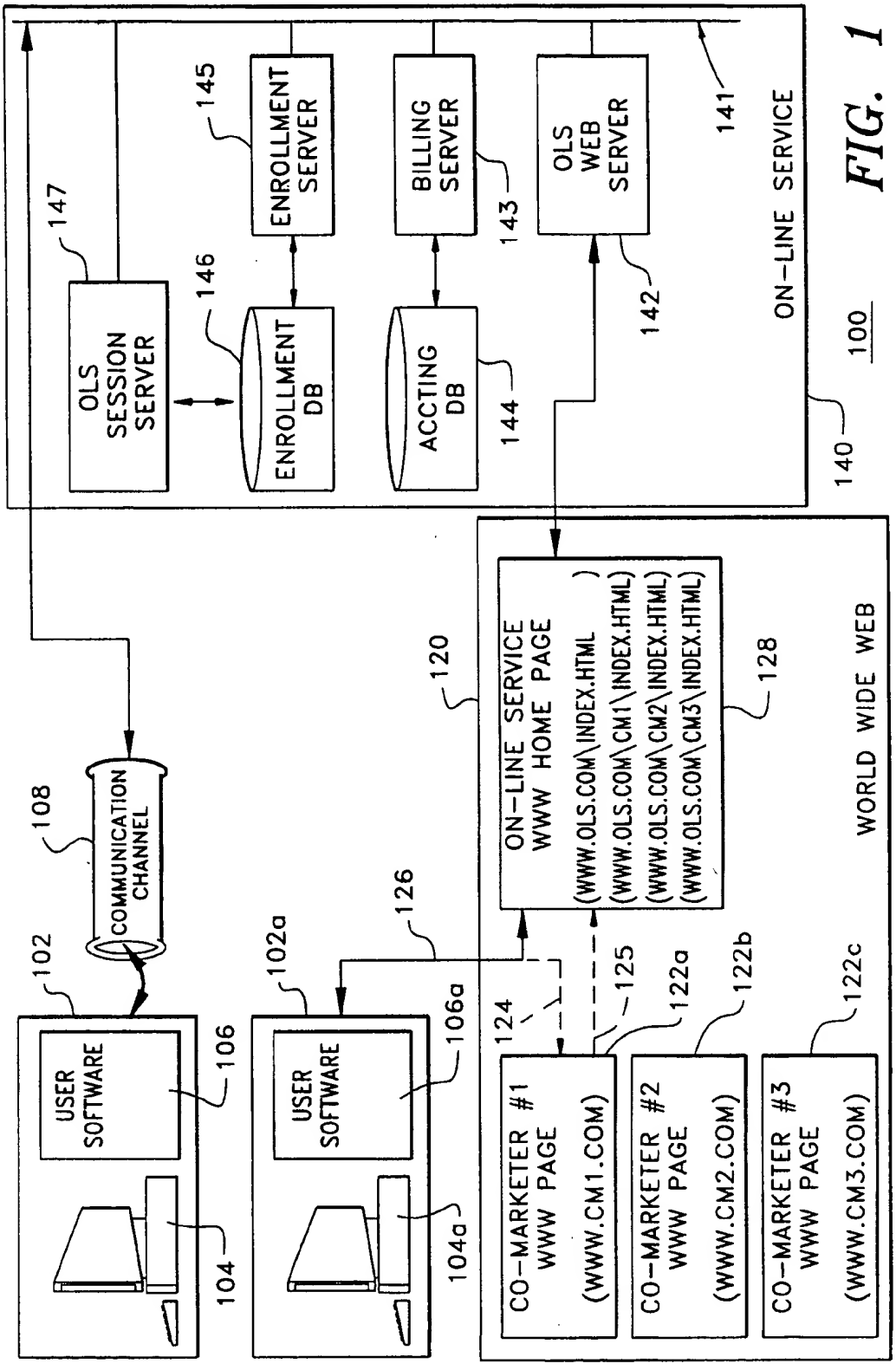
ON-LINE SERVICE
100
140
141
OLS SESSION SERVER
147
ENROLLMENT DB
146
ENROLLMENT SERVER
145
ACCTING DB
144
BILLING SERVER
143
OLS WEB SERVER
142
ON-LINE SERVICE WWW HOME PAGE
(WWW.OLS.COM\INDEX.HTML
(WWW.OLS.COM\CM1\INDEX.HTML)
(WWW.OLS.COM\CM2\INDEX.HTML)
(WWW.OLS.COM\CM3\INDEX.HTML)
120
128
WORLD WIDE WEB
COMMUNICATION CHANNEL
108
102
102a
126
USER SOFTWARE
106
106a
104
104a
124
125
CO-MARKETER #1 WWW PAGE
(WWW.CM1.COM)
122a
CO-MARKETER #2 WWW PAGE
(WWW.CM2.COM)
122b
CO-MARKETER #3 WWW PAGE
(WWW.CM3.COM)
122c

FIG. 1

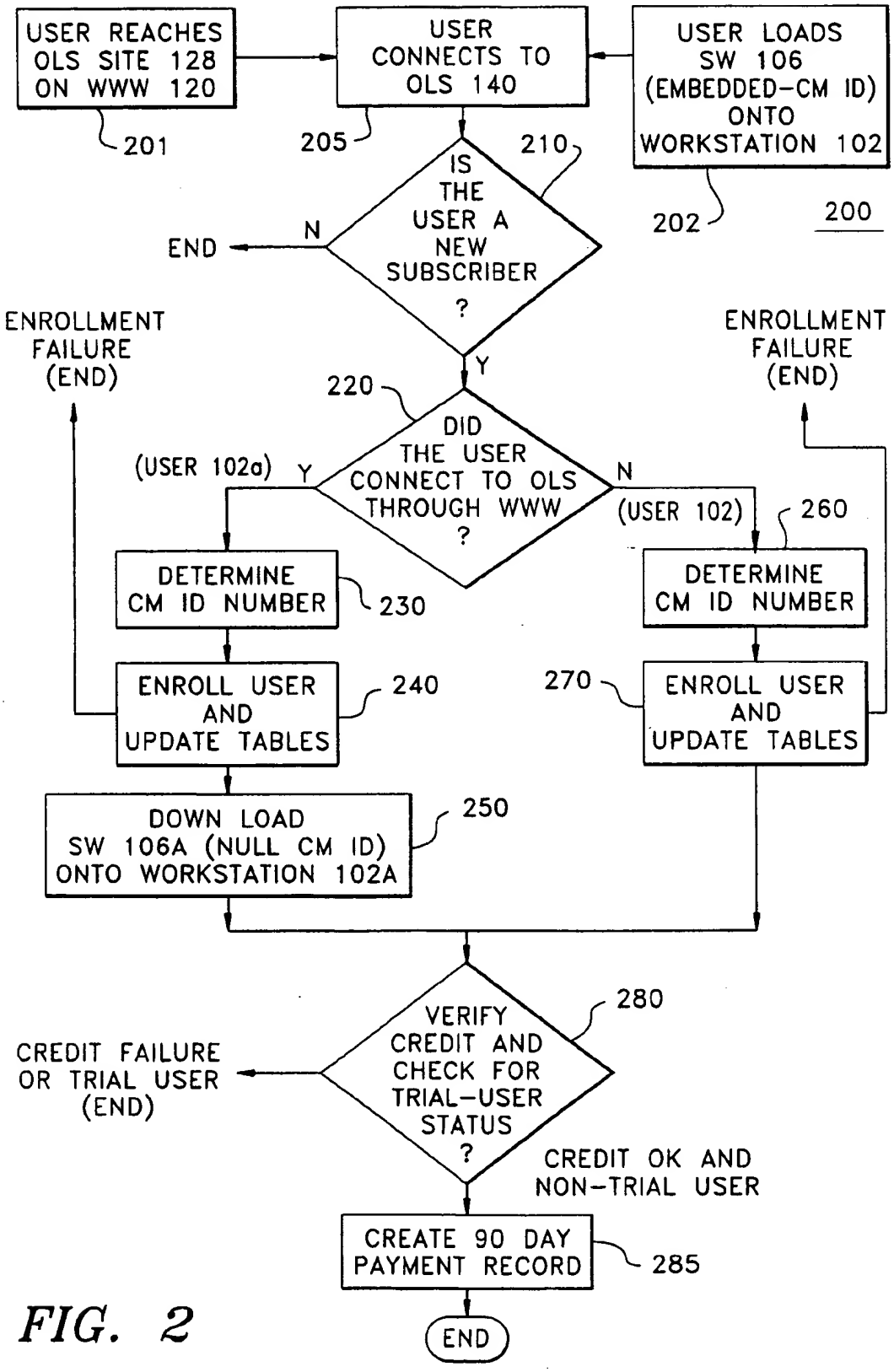
USER REACHES OLS SITE 128 ON WWW 120
201
USER CONNECTS TO OLS 140
205
USER LOADS SW 106 (EMBEDDED-CM ID) ONTO WORKSTATION 102
202
200
IS THE USER A NEW SUBSCRIBER ?
210
N
END
Y
ENROLLMENT FAILURE (END)
ENROLLMENT FAILURE (END)
220
DID THE USER CONNECT TO OLS THROUGH WWW ?
(USER 102a)
Y
N
(USER 102)
260
DETERMINE CM ID NUMBER
230
DETERMINE CM ID NUMBER
ENROLL USER AND UPDATE TABLES
240
270
ENROLL USER AND UPDATE TABLES
DOWN LOAD SW 106A (NULL CM ID) ONTO WORKSTATION 102A
250
VERIFY CREDIT AND CHECK FOR TRIAL-USER STATUS ?
280
CREDIT FAILURE OR TRIAL USER (END)
CREDIT OK AND NON-TRIAL USER
CREATE 90 DAY PAYMENT RECORD
285
END

FIG. 2

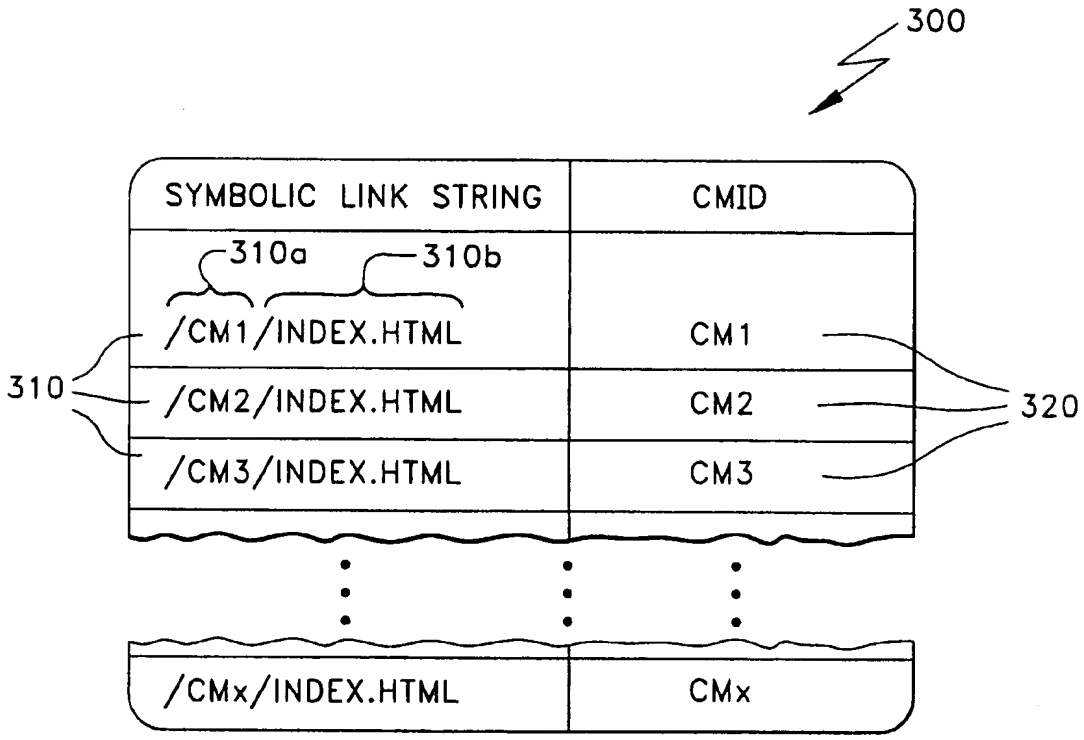
300
SYMBOLIC LINK STRING
CMID
310a
310b
/CM1/INDEX.HTML
CM1
310
/CM2/INDEX.HTML
CM2
320
/CM3/INDEX.HTML
CM3
/CMx/INDEX.HTML
CMx

FIG. 3

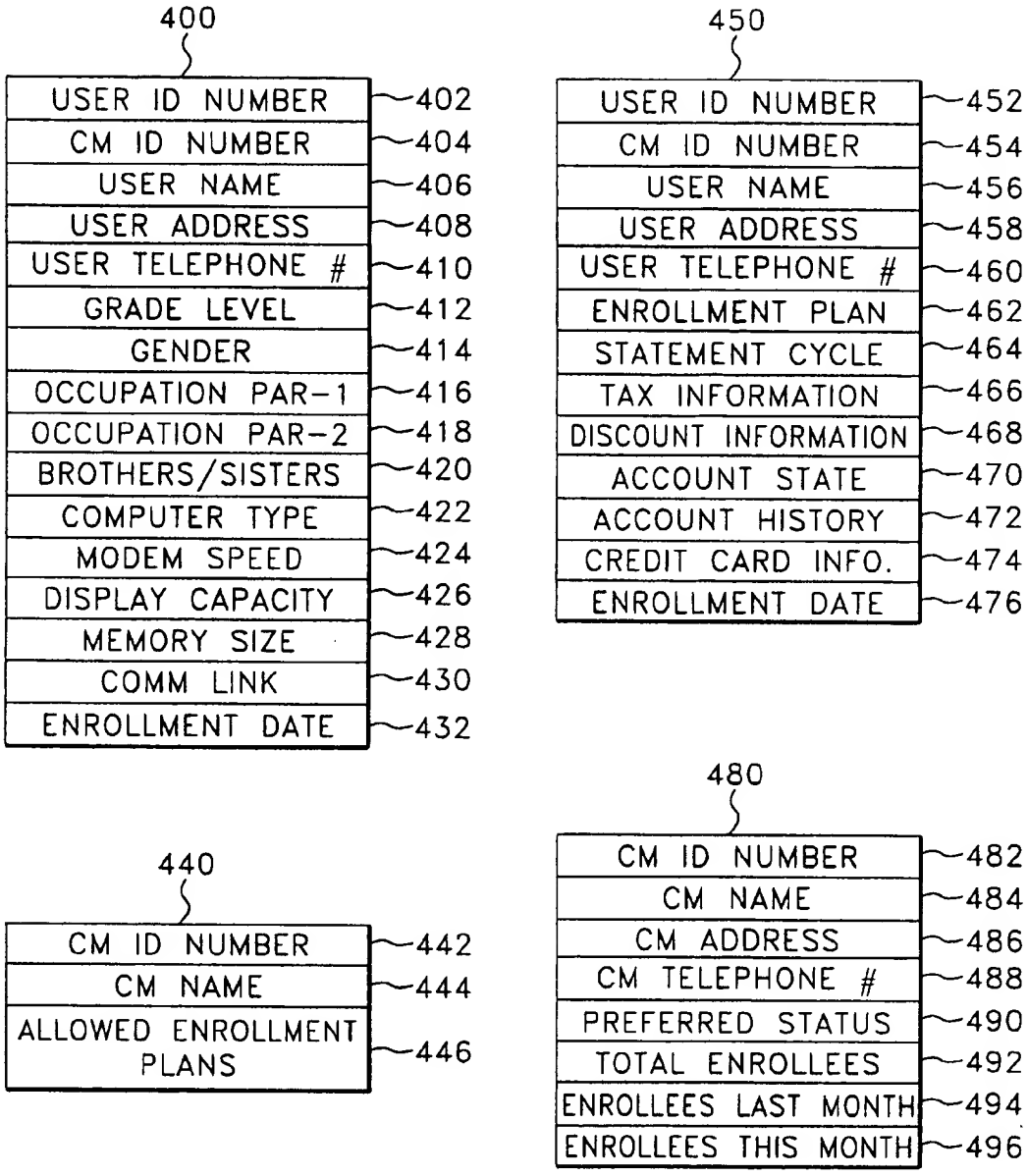
400
USER ID NUMBER
402
CM ID NUMBER
404
USER NAME
406
USER ADDRESS
408
USER TELEPHONE #
410
GRADE LEVEL
412
GENDER
414
OCCUPATION PAR-1
416
OCCUPATION PAR-2
418
BROTHERS/SISTERS
420
COMPUTER TYPE
422
MODEM SPEED
424
DISPLAY CAPACITY
426
MEMORY SIZE
428
COMM LINK
430
ENROLLMENT DATE
432
450
USER ID NUMBER
452
CM ID NUMBER
454
USER NAME
456
USER ADDRESS
458
USER TELEPHONE #
460
ENROLLMENT PLAN
462
STATEMENT CYCLE
464
TAX INFORMATION
466
DISCOUNT INFORMATION
468
ACCOUNT STATE
470
ACCOUNT HISTORY
472
CREDIT CARD INFO.
474
ENROLLMENT DATE
476
440
CM ID NUMBER
442
CM NAME
444
ALLOWED ENROLLMENT PLANS
446
480
CM ID NUMBER
482
CM NAME
484
CM ADDRESS
486
CM TELEPHONE #
488
PREFERRED STATUS
490
TOTAL ENROLLEES
492
ENROLLEES LAST MONTH
494
ENROLLEES THIS MONTH
496

FIG. 4

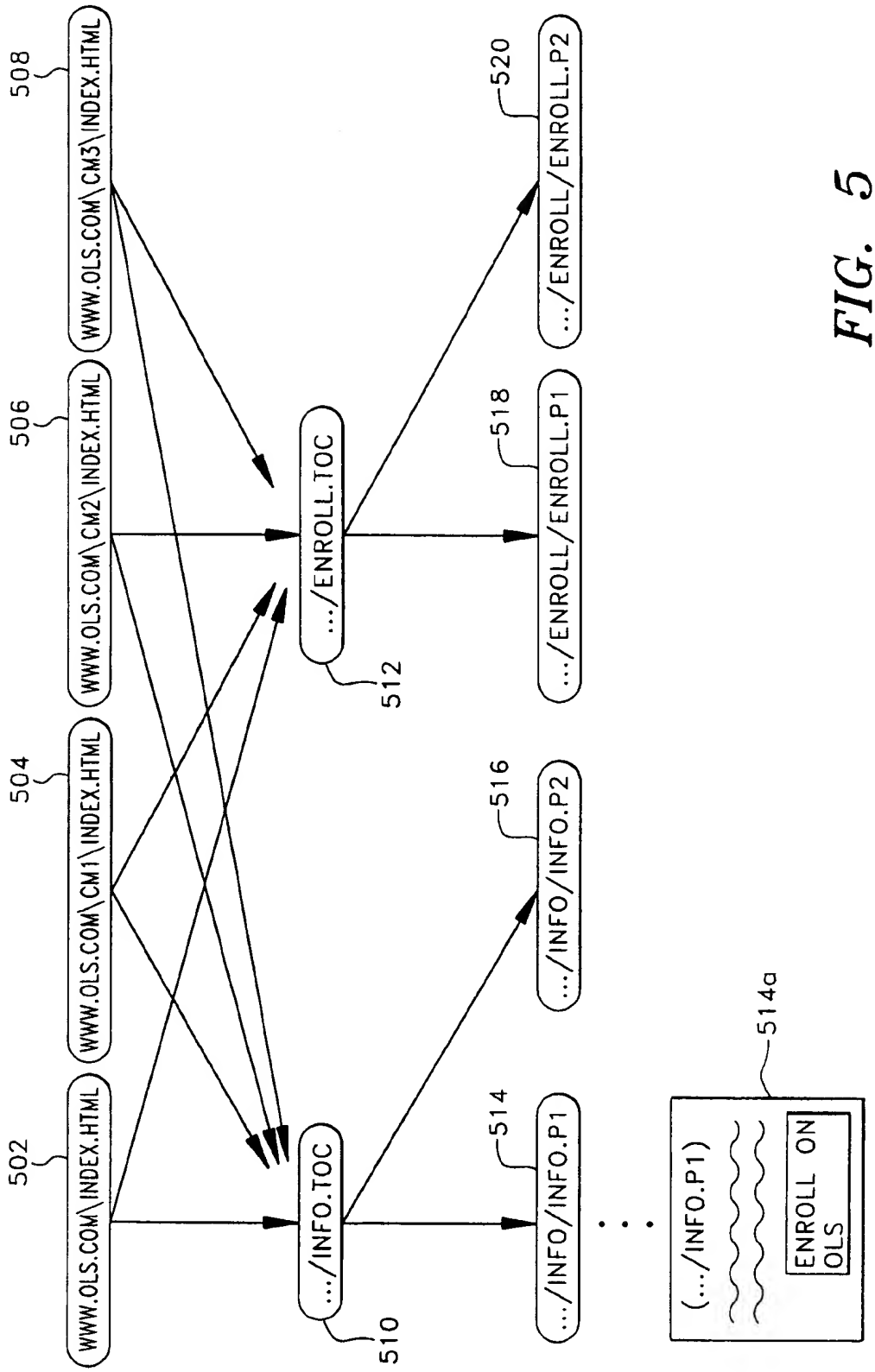
502
WWW.OLS.COM\INDEX.HTML
504
WWW.OLS.COM\CM1\INDEX.HTML
506
WWW.OLS.COM\CM2\INDEX.HTML
508
WWW.OLS.COM\CM3\INDEX.HTML
.../INFO.TOC
510
.../ENROLL.TOC
512
.../INFO/INFO.P1
514
.../INFO/INFO.P2
516
.../ENROLL/ENROLL.P1
518
.../ENROLL/ENROLL.P2
520
(.../INFO.P1)
ENROLL ON OLS
514a

FIG. 5

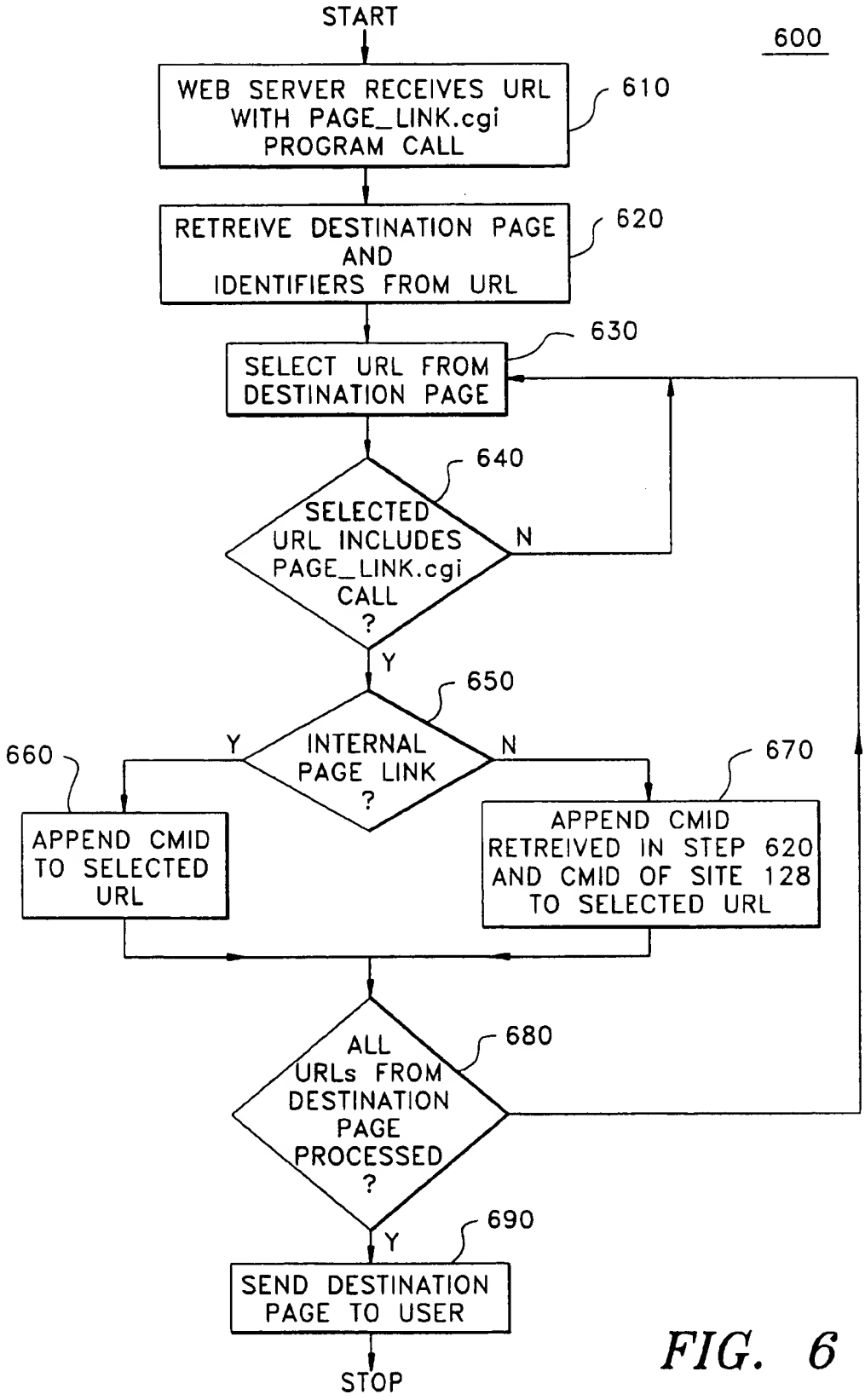
START
600
WEB SERVER RECEIVES URL WITH PAGE_LINK.cgi PROGRAM CALL
610
RETREIVE DESTINATION PAGE AND IDENTIFIERS FROM URL
620
SELECT URL FROM DESTINATION PAGE
630
SELECTED URL INCLUDES PAGE_LINK.cgi CALL ?
640
N
Y
INTERNAL PAGE LINK ?
650
Y
N
660
APPEND CMID TO SELECTED URL
670
APPEND CMID RETREIVED IN STEP 620 AND CMID OF SITE 128 TO SELECTED URL
ALL URLs FROM DESTINATION PAGE PROCESSED ?
680
Y
690
SEND DESTINATION PAGE TO USER
STOP

FIG. 6

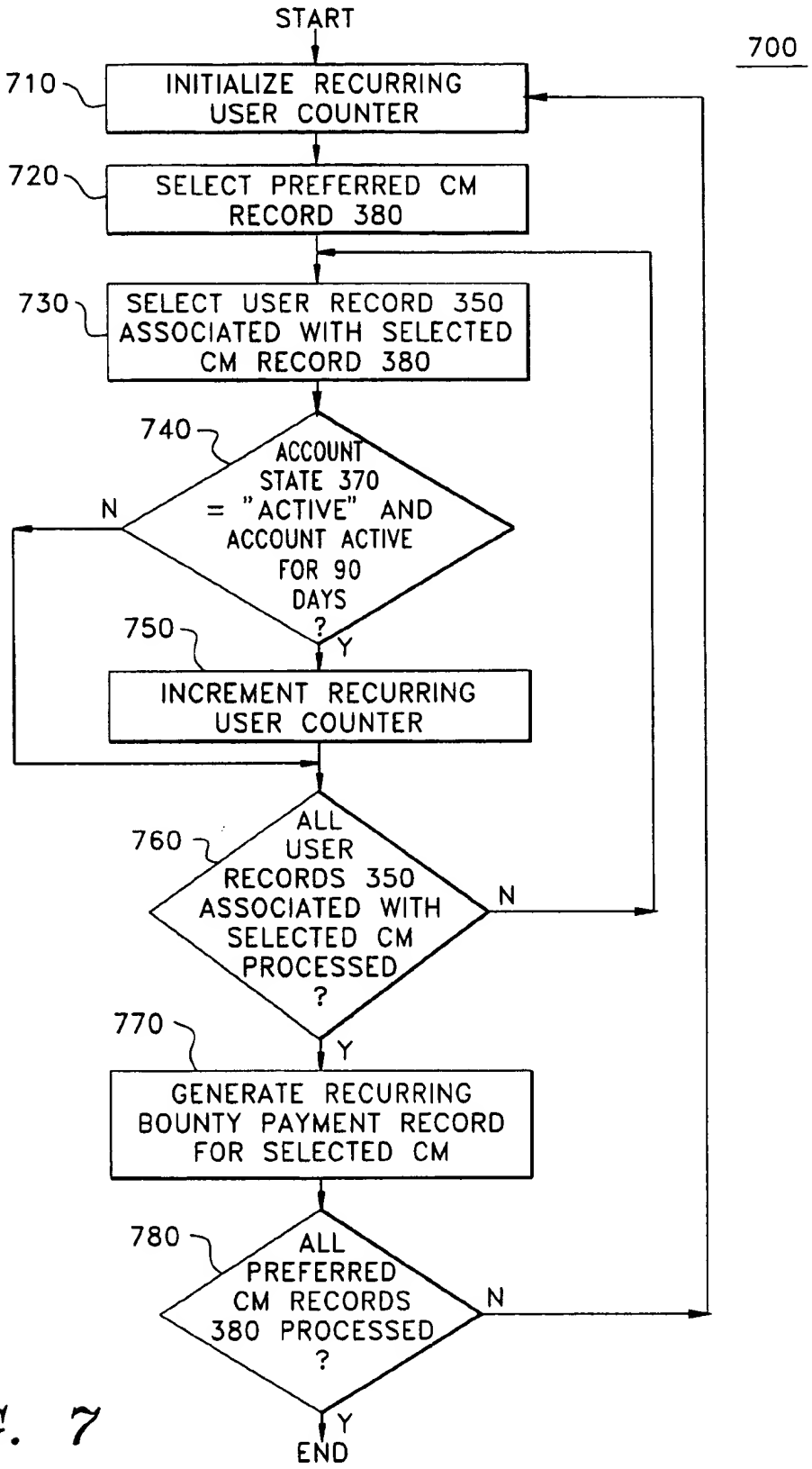
START
700
710
INITIALIZE RECURRING USER COUNTER
720
SELECT PREFERRED CM RECORD 380
730
SELECT USER RECORD 350 ASSOCIATED WITH SELECTED CM RECORD 380
740
ACCOUNT STATE 370 = "ACTIVE" AND ACCOUNT ACTIVE FOR 90 DAYS ?
N
Y
750
INCREMENT RECURRING USER COUNTER
760
ALL USER RECORDS 350 ASSOCIATED WITH SELECTED CM PROCESSED ?
N
Y
770
GENERATE RECURRING BOUNTY PAYMENT RECORD FOR SELECTED CM
780
ALL PREFERRED CM RECORDS 380 PROCESSED ?
N
Y
END

FIG. 7

METHOD AND APPARATUS FOR REDIRECTING A USER TO A NEW LOCATION ON THE WORLD WIDE WEB USING RELATIVE UNIVERSAL RESOURCE LOCATORS

FIELD OF THE INVENTION

The present invention is directed to on-line computer systems for delivering information and computer services to users coupled to such systems. More particularly, the present invention is directed to an automated system for capturing information representing the identity of an entity that has directed a user to an on-line system. Still more particularly, the present invention is directed to a system for tracking user paths on the world wide web (WWW).

BACKGROUND OF THE INVENTION

On-line computer services such as, for example, on-line information retrieval services, on-line travel reservation services, or on-line stock trading services, receive new subscribers from various sources. New subscribers are typically directed to an on-line service by advertisements placed by the on-line service itself through word-of-mouth referrals given by existing system subscribers, or by third party computer system marketers (referred to hereinafter as co-marketers) of the on-line service. Different co-marketers may typically use different media for promoting a particular on-line computer service. For example, a magazine acting as a co-marketer for an on-line service might use a magazine advertisement, which includes a free software disk for accessing the on-line service, to promote the on-line service. Alternatively, various directory services available on the WWW such as, for example, the Yaho® or Web Crawler® directory services, might use a listing on their directory pages and a link to a WWW page associated with an on-line service, to direct potential new subscribers to an on-line service. Thus, new subscribers can be directed to the same on-line service from different co-marketers and through different marketing channels. It would be desirable to be able to capture and track the co-marketing source which directed each new subscriber to an on-line service. In addition, it would be desirable to capture and track the co-marketing source which directed a new subscriber to an on-line service in a manner which required no participation or intervention from the new subscriber.

When a user navigates through various sites during a session on the WWW, the navigational history reflecting the past locations traversed by the user during the session is typically lost as the user moves from one site to the next site. Thus, unless the user were to manually track the various sites traversed during a world wide web session, it would be difficult for the user, or for any service monitoring the user, to know the identity of any previous world wide web site traversed by the user during a session. It would be desirable to have a system for attaching navigational history information to a user traversing the WWW so that a current web site could determine electronically at least the previous WWW site visited by the user.

Universal resource locators are often used to direct users through various pages at a site on the world wide web. There are two different techniques for specifying addresses using universal resource locators. In a first technique, known as fully specified addressing, the full string associated with a universal resource locator is specified each time a user moves from one web page to the next web page. In the second technique, known as relative addressing, only information representing the root directory or the current directory (or subdirectory) of the user is specified as a user moves from one web page to the next web page. One drawback of using relative universal resource locator addressing is that it is impossible to move "up a directory tree" using such addressing, without specifying the root directory. UNIX symbolic links may be used in specifying a particular root directory. However, when relative addressing is used, it is impossible to carry this UNIX symbolic link information forward as a user moves from page to page. It would be desirable if this limitation of relative universal resource locator addressing could be ameliorated, such that the UNIX symbolic link information could be retained during the relative addressing of web pages.

It is therefore an object of the present invention to provide a unified system for capturing and tracking a co-marketing source which directed a new subscriber to an on-line service.

It is a further object of the present invention to provide a system for capturing and tracking information identifying a co-marketing source which directed a new subscriber to an on-line service, which requires no participation or intervention from the new subscriber.

It is a still further object of the present invention to provide a system for attaching navigational history information to a user traversing the world wide web so that a current web site could determine electronically at least the previous world wide web site visited by the user.

It is a still further object of the present invention to provide a system which could be used in conjunction with relative universal resource locator addressing, which permitted a user in a particular directory at a web site to move up a directory tree.

These and other objects of the invention will become apparent from the description of the invention which follows.

SUMMARY OF THE INVENTION

The present invention is directed to an apparatus for capturing and storing a co-marketer identification symbol representing an identity of an entity that has referred a user on a user station to a computer service, wherein the user station is coupled to the computer service by a communications path. A database is provided for storing a plurality of user records. Each of the user records includes a user identification field for storing information uniquely associating each of the user records with a user, and a co-marketer identification field for storing identity information representing the identity of an entity that directed the user to the computer service. An enrollment means is coupled to the communications path and the database, and is provided for enrolling a user on the computer service. The enrollment means includes means for determining a co-marketer that directed the user to the computer service, and means for assigning a unique user identification number to the user. The enrollment means further includes means for storing a co-marketer identification symbol representative of a co-marketer and the unique user identification number of a user in the co-marketer identification and user identification fields, respectively, of one of the user records.

In accordance with a further aspect, the present invention is directed to a method and apparatus for tracking the navigation path of a user that has been directed to a second site on the WWW from a first site on the WWW. The first site has a universal resource locator (URL) symbol for uniquely identifying an address of the first site on the WWW, and the second site has a URL symbol for uniquely

identifying an address of the second site on the WWW. A composite URL symbol is received at the second WWW site when the user is directed from the first site to the second site. The composite URL symbol has a first portion corresponding to the URL symbol of the second site, and a second portion that includes information corresponding to the identity of the first site. The information representative of the identity of the first site is captured at the second WWW site from the second portion of the composite URL. The identity of the first WWW site is then determined at the second WWW site by comparing information from the second portion of the composite URL to a table having a plurality of entries each of which is representative of a known WWW site.

In accordance with a still further aspect, the present invention is directed to a method and apparatus for redirecting a user from a first location on the WWW to a second location on the WWW, wherein relative URL addressing is used during the redirecting process. A signal is received from the first location indicating that the user wishes to move from the first location on the WWW to the second location on said WWW. In response to the signal, a current URL representing an address of the first location on the WWW and a destination URL portion representative of an address of the second location on the WWW are passed to a redirecting means. The current URL includes first and second portions. A destination URL is formed with redirecting means by substituting the destination URL portion in place of the second portion in the current URL, wherein the destination URL represents a relative address of the second location on the WWW. The user is then moved from the first location on the WWW to the second location on the WWW in accordance with the destination URL formed by the redirecting means.

In accordance with a still further aspect, the present invention is directed to a method and apparatus for tracking the navigation path of a user that has been directed to a second site on the WWW from a first site on the WWW. A URL is received at the second WWW site when the user is directed from the first site to the second site. At the second WWW site, information representative of an identity of the first WWW site is captured by identifying a first code in the URL. A destination web page is determined for the user, and a revised destination web page is formed by inserting a second code representative of the identity of the first WWW site into at least one selected web page link associated with the destination web page. The revised destination web page is then transmitted to the user.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the manner in which the above-recited and other advantages and objects of the invention are obtained and can be appreciated, a more particular description of the invention briefly described above will be rendered by reference to a specific embodiment thereof which is illustrated in the appended drawings. Understanding that these drawings depict only a typical embodiment of the invention and are not therefore to be considered limiting of its scope, the invention and the presently understood best mode thereof will be described and explained with additional specificity and detail through the use of the accompanying drawings.

FIG. **1** is a block diagram showing a system for enrolling new users on an on-line system and capturing co-marketing information associated with such new users, in accordance with a preferred embodiment of the present invention.

FIG. **2** is a flow diagram illustrating the operation of a system for enrolling new users on an on-line system and capturing co-marketing information associated with such new users, in accordance with a preferred embodiment of the present invention.

FIG. **3** is a diagram of a look-up table for associating UNIX symbolic link information with co-marketers, in accordance with a preferred embodiment of the present invention.

FIG. **4** is a diagram illustrating preferred data structures for storing a Subscriber Information Directory Table, a Customer Information Directory Table, and first and second Co-Marketer Information Directory Tables, in accordance with a preferred embodiment of the present invention.

FIG. **5** is a schematic diagram illustrating the use of UNIX symbolic links and relative URL addressing for moving between locations on the WWW, in accordance with a preferred embodiment of the present invention.

FIG. **6** is a flow diagram illustrating the operation of a system for attaching a code representing the navigational history of a user on the WWW onto selected URL page links on a destination web page of a user, in accordance with an alternative preferred embodiment of the present invention.

FIG. **7** is a flow diagram illustrating the operation of a system for generating recurring bounty payment records, in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to FIG. **1**, there is shown a block diagram of a system **100** for enrolling new users on an on-line system and capturing co-marketing information associated with such new users, in accordance with a preferred embodiment of the present invention. System **100** includes a first type of user station **102**. The user station **102** includes a personal computer (PC) **104** and user software **106** which resides on PC **104**. User software **106** includes a graphical user interface (not shown) for facilitating communications between user station **102** and On-Line Service (OLS) **140**. OLS **140** represents a computer service such as, for example, an information retrieval service, a travel reservation service, or a stock trading service, which is available on-line to a user of user station **102**. User station **102** is coupled to a Fiber Distributed Data Interface (FDDI) **141** in OLS **140** by a communications channel **108**. In alternate embodiments, a standard communications bus or a local area network may be substituted for FDDI **141**. Communications channel **108** may consist of a communications link formed over a public network such as the Internet. Alternatively, communications channel **108** may consist of a communications link formed between PC **104** and FDDI **141** over a commercial network. Thus, commercial networks such as, for example, the Prodigy® network, the CompuServe® network, or the Microsoft® network, may be used to establish a communications channel **108** for linking PC **104** and FDDI **141**. Although in the preferred embodiment of the present invention, element **140** is shown as being an on-line computer service, it will be understood by those skilled in the art that element **140** may alternatively represent any computer service, regardless of whether the service is available on-line.

As explained more fully below, user software **106** is preferably provided to a user of user station **102** by an on-line service co-marketer (CM) and loaded onto PC **104** prior to the time the user of user station **102** attempts to enroll on OLS **140**. User software is preferably provided to the user of user station **102** from the CM via a floppy disk,

CD-ROM disk magnetic tape or through a File Transfer Protocol (FTP) site on the Internet. User software **106** preferably includes an embedded co-marketer symbol or code which can be recognized by OLS **140** whenever the user of user station **102** connects to OLS **140**. The co-marketer symbol embedded in the user software uniquely represents the identity of the co-marketer that provided user software **106** to the user of user station **102**. An example of a co-marketer that might provide user software **106** to a user of user station **102** might include, for example, a magazine publisher that advertises OLS **140** in its magazine and includes a floppy disk with user software **106** together with the magazine advertisement.

System **100** also includes a second type of user station **102***a*. The user station **102***a* includes a PC **104***a* and user software **106***a* which resides on PC **104***a*. Like user software **106**, user software **106***a* includes a graphical user interface (not shown) for facilitating communications between user station **102***a* and On-Line Service (OLS) **140**. However, unlike user station **102**, user station **102***a* is coupled to OLS **140** through the WWW **120**. More particularly, user station **102***a* is coupled to an OLS web server **142** at OLS **140** through the WWW site **128** associated with OLS **140** on the WWW **120**.

The navigation history of the user of user station **102***a* on WWW **120** is shown generally by dotted lines **124**, **125** and solid line **126**. As shown by dotted line **124**, user station **102***a* was initially coupled to site **122***a* of a first co-marketer on WWW **120**. In the preferred embodiment of the present invention, a page at site **122***a* includes an advertisement (not shown) for OLS **140**. In addition, the advertisement at co-marketer site **122***a* is preferably such that a user of user station **102***a* may chose to connect to OLS site **128** simply by "clicking" on the advertisement at WWW site **122***a*. As explained more fully below in connection with FIG. **5**, when the user of user station **102***a* clicks on the advertisement for OLS **140** at WWW site **122***a*, WWW site **122***a* forms a special destination URL having two parts. The first part of the destination URL is formed of the URL associated with OLS site **128** (e.g., WWW.OLS.COMM). The second part of the destination URL is formed of a destination filename (e.g., INDEX.HTML) and a UNIX symbolic link (e.g., \CM1) that is prepended to the beginning of the destination filename by the co-marketer (co-marketer #1) associated with WWW site **122***a*. The symbol or code used to form the UNIX symbolic link (e.g., \CM1) inserted by co-marketer #1 at site **122***a* is uniquely associated with co-marketer #1 in system **100**. The complete destination URL is used to route the user (along dotted line **125**) from WWW site **122***a* of co-marketer #1 to OLS WWW site **128**. Upon reaching OLS site **128**, the user station **102***a* is coupled to OLS WWW site **128** by solid line **126**, and the complete destination URL formed at site **122***a* (including the UNIX symbolic link portion of such destination URL) is passed to OLS **140** through OLS web server **142**.

In addition to the co-marketer represented by site **122***a* (co-marketer #1), users may be directed to OLS site **128** on WWW **120** through advertisements (not shown) on pages at the sites of other co-marketers represented on the WWW **120** such as, for example, through an advertisement at WWW site **122***b* (representing co-marketer #2), or an advertisement at WWW site **122***c* (representing co-marketer #3). Like the situation described above wherein a user of user station **102***a* clicks on the advertisement for OLS **140** at WWW site **122***a*, when the user of user station **102***a* clicks on the advertisement for OLS **140** at WWW site **122***b* or **122***c*, WWW site **122***b* forms a special destination URL having two parts. The first part of the destination URL is again formed of the URL associated with OLS site **128** (e.g., WWW.OLS.COMM), and the second part of the destination URL is again formed of a UNIX symbolic link that is prepended to a destination filename. However, if the user has clicked on an advertisement for OLS **140** at site **122***b*, the UNIX symbolic link (e.g., \CM2) inserted by the co-marketer (co-marketer #2) will be uniquely associated in system **100** with co-marketer #2 and site **122***b*. Similarly, if the user has clicked on an advertisement for OLS **140** at site **122***c*, the UNIX symbolic link (e.g., \CM3) inserted by the co-marketer (co-marketer #3) will be uniquely associated in system **100** with co-marketer #3 and site **122***c*. A complete destination URL formed at either site **122***b* or **122***c* may be used as described above in connection with site **122***a* to route the user from site **122***b* or **122***c* to OLS WWW site **128**. Although only three co-marketers are shown in FIG. **1** for directing users from the WWW sites of such co-marketers to OLS site **128**, it will be understood by those skilled in the art that more than three co-marketing sites may be used in conjunction with the present invention for directing users to OLS site **128** on WWW **120**.

In the preferred embodiment of system **100**, OLS **140** will accept a user that has been routed to OLS site **128** by a co-marketer only if the co-marketer that has done the routing is an authorized co-marketer for OLS **140**. In system **100**, a co-marketer will be authorized to route users to site **128** only after the co-marketer has been assigned and has received a unique UNIX symbolic link associated with the co-marketer from OLS **140**. First and second Co-Marketer Identification Tables are stored respectively on enrollment database **146** and accounting database **144** at OLS **140**. As described more fully below in conjunction with FIG. **4**, each Co-Marketer Identification Table includes a separate record for storing a co-marketer identification code associated with each co-marketer (e.g., co-marketer #1, co-marketer #2, co-marketer #3) that has been authorized by OLS **140** to route users to OLS site **128**.

System **100** includes an enrollment server **145** for enrolling new users on OLS **140**, and a billing server **143** for generating bounty payment records for issuing bounty payments to authorized co-marketers that have referred users of user stations **102**, **102***a* to OLS **140**. For purposes of the present application, the term "server", when used in conjunction with "enrollment" or "billing", is used to refer to a physical machine formed from at least one computer processor having associated memory and software installed thereon for executing the functions to be performed by the server. In the preferred embodiment of the present invention, the hardware platform used for implementing enrollment server **145** consists of a Tandem Model 4412 computer having 2 processors, 200 MB of memory, a 1 GB system disk, and a 4 GB RAID disk; a flow diagram illustrating the operation of a preferred software system **200** for implementing enrollment server **145** on this hardware platform is shown in FIG. **2** and discussed below. In the preferred embodiment of the present invention, the hardware platform used for implementing billing server **143** consists of a Tandem Model 4412 computer having 2 processors, 200 MB of memory, a 1 GB system disk, and a 4 GB RAID disk; a flow diagram illustrating the operation of a preferred software system **700** for implementing billing server **143** on this hardware platform is shown in FIG. **7** and discussed below. Although specific hardware is disclosed herein for implementing enrollment server **145** and billing server **143**, it will be understood by those skilled in the art that other suitable hardware platforms may alternatively be used to implement

servers **143**, **145**. However, the two hardware systems described above for implementing servers **143**, **145** are preferred because these systems allow servers **143**, **145** to be hardware-scalable. This "hardware scalability" allows OLS **140** to handle an increasing number of user stations **102**, **102***a* simply by adding further processors to the existing hardware used for servers **143**, **145**, without modification of the software running on such hardware. In the embodiment shown in FIG. **1**, enrollment server **145** and billing server **143** are implemented in software on separate machines which are physically distinct from the processor(s) used for implementing OLS session server **147**. In alternative embodiments (not shown), enrollment server **145** and billing server **143** may be implemented in software together on a single server or as part of OLS session server **147**.

Referring now to FIG. **2**, there is shown a flow diagram illustrating the operation of a system **200** for enrolling new users associated with user stations **102**, **102***a* onto OLS **140**, and capturing co-marketing information associated with such new users, in accordance with a preferred embodiment of the present invention. In step **205**, a user station **102** or **102***a* connects to OLS **140**. In the case of a user station **102**, the connection to OLS **140** is made by the user station via communications channel **108** directly to FDDI **141**; in the case of a user station **102***a*, the connection is made via OLS site **128** to OLS web server **142**. Next, in step **210**, the enrollment means **145** determines whether the user which just connected to OLS **140** is a new subscriber to OLS **140**. In a preferred embodiment, step **210** is performed either (i) by waiting for the user to issue an enrollment request (from page **514***a* described below) to OLS **140**, or (ii) by prompting the user to enter a login name and comparing the login name entered by the user to a list of valid login names maintained in enrollment database **146**. If the user is a new subscriber to OLS **140**, processing proceeds to step **220**, where the enrollment means **145** determines how the user connected to OLS **140**. More particularly, if the user connected to OLS **140** through web server **142**, the enrollment means **145** determines that the user is operating on a user station **102***a* which is connected to OLS **140** via WWW **120**; otherwise, enrollment means **145** determines that the user is operating on a user station **102** which is connected to OLS **140** via communications channel **108**.

If a determination is made in step **220** that the user is operating on a user station **102***a* that connected to OLS **140** through WWW **120**, then processing proceeds to step **230** where enrollment means **145** determines a co-marketer identification symbol or code (CM ID) associated with the user station **102***a*. In this step, the complete destination URL which was passed to OLS web server **142** when the user was directed from a co-marketer site **122***a*, **122***b*, **122***c* to OLS site **128** is retrieved by OLS web server **142**, and the second portion of the destination URL, which contains both a UNIX symbolic link and a destination filename (which may be specified implicitly), is then extracted from the complete destination URL. As mentioned above, the UNIX symbolic link embedded in the destination URL uniquely identifies a co-marketer which directed the user from its WWW site to OLS site **128**. Next, in step **240**, enrollment means **145** attempts to enroll the user in OLS **140**. In this step, the enrollment means **145** obtains a co-marketer identification code (CMID) associated with the destination URL using look-up table **300** (shown in FIG. **3**). For each valid co-marketer in system **100**, table **300** has one or more entries representing the second portion of a potential destination URL that might be generated by such a co-marketer. Thus, each entry in table **300** has a record **310** representing a UNIX symbolic link (**310***a*) and destination filename (**310***b*) that may be provided by a valid co-marketer, and a corresponding record **320** representing a CMID associated with the co-marketer assigned to UNIX symbolic link **310***a* in system **100**. If the second portion of the destination URL is not recognized as corresponding to a valid CMID, the enrollment session is terminated. A list of valid (or authorized) CMID's is preferably stored in a Co-Marketer Information Directory Table on enrollment database **146** shown in FIG. **4**. The Co-Marketer Information Directory Table on enrollment database **146** is formed of a plurality of individual records **440**, each of which contains a field **442** for storing the CMID of a system authorized co-marketer.

Referring still to step **240**, if the enrollment means **145** determines that the user has been directed to OLS **140** from an authorized co-marketer, the enrollment means attempts to enroll the user in OLS **140** by assigning the user a unique user identification number and then asking the user to enter various personal information which is then stored in a Subscriber Information Directory Table on enrollment database **146**. As shown in FIG. **4**, the Subscriber Information Directory Table on enrollment database **146** is formed of a plurality of individual records **400**, each of which contains several fields for storing information about a particular user. More particularly, for each user enrolled on OLS **140** there is a record **400** with a field **402** for storing the unique user identification number assigned to the user, a field **404** for storing the CM ID of the co-marketer that directed the user to OLS **140**, fields **406**, **408**, **410** for respectively storing the name, address and telephone number of the user, fields **412**, **414** for respectively storing the grade level and gender of the user, fields **416**, **418** for storing information representing the occupations of the user's parents, field **420** for storing the user's number of siblings, and fields **422**, **424**, **426**, **428** and **430** for respectively storing information representing the type of computer used by the user, the user's modem speed, the display capabilities of the user's display, the size of the memory of the user's PC, and the identity of the communications link (e.g., the Internet, the Prodigy® network, the CompuServe® network, or the Microsoft® network) used for accessing OLS **140**.

In addition to storing information about the user in the Subscriber Information Directory Table on enrollment database **146**, information about the user being enrolled in step **240** is also stored on a separate Customer Information Directory located on accounting database **144**. As shown in FIG. **4**, the Customer Information Directory Table on accounting database **144** is formed of a plurality of individual records **450**, each of which contains several fields for storing information about a particular user. Fields **452**, **454**, **456**, **458** and **460** store substantially the same information as that which is stored respectively in fields **402**, **404**, **406**, **408** and **410**, respectively, described above. However, in step **240** the user is also prompted by the enrollment means **145** to choose an enrollment plan and enter certain personal financial information which is then stored in records **450**. In a preferred embodiment, the user may select either a free trial membership or one of several active membership plans, and a code representing the enrollment plan selected by the user is then stored in field **462**. If the user has selected either an active or free trial membership plan, the user is prompted to enter credit card information for paying for the selected enrollment plan. This credit card information is stored in field **474** and used by billing means **143** to verify that the user is credit worthy.

Referring again to FIG. **2**, following the entry of the user information into records **400**, **450**, processing proceeds to

step **250**, where enrollment means **145** downloads a copy of user software **106***a* onto user station **102***a*. Unlike the user software **106** described above, user software **106***a* does not include any embedded CM ID information, or, to state it another way, user software **106***a* contains a "null" CM ID field embedded therein.

Referring still to FIG. **2**, if a determination is made in step **220** that the user is operating on a user station **102** that connected to OLS **140** through channel **108**, then processing proceeds to step **260** where enrollment means **145** determines a CM ID associated with the user station **102***a*. In contrast to step **230**, the CM ID is determined in step **260** from an embedded CM ID stored on user software **106** which was previously loaded (in step **202**) on user station **102**. Next, in step **270**, enrollment means **145** attempts to enroll the user in OLS **140**. Step **270** is substantially the same as step **240** described above, except in step **270** the CM ID used for creating and updating the records **400** and **450** represents the CM ID embedded in software **106**, as opposed to a CM ID determined from a UNIX symbolic link passed to OLS **140** over WWW **120**.

Following either step **250** or **270**, processing proceeds to step **280**, where enrollment means **145** communicates with billing means **143** to determine whether the user is credit worthy. In addition, enrollment means **145** determines (based on the information stored in field **462**) whether the user has enrolled as an active (i.e., non-trial) user. If the user is credit worthy and has enrolled as an active user, processing proceeds to step **285**, where a payment record for paying a one-time bounty (or referral fee) to the co-marketer that directed the user to OLS **140** is created.

As explained more fully below, the amount of the one-time bounty payment created in step **285** is preferably dependent on the number of users previously directed to OLS **140** by the co-marketer during a previous period (month or quarter). A Co-Marketer Information Directory located on accounting database **144** is provided for storing information about each authorized co-marketer on OLS **140**. As shown in FIG. **4**, the Co-Marketer Information Directory Table on accounting database **144** is formed of a plurality of records **480**, each of which contains several fields for storing information about a particular authorized co-marketer. More particularly, a field **482** is provided for storing the CM ID associated with a co-marketer, and fields **484**, **486** and **488** are respectively provided for storing name, address and telephone number information representing the co-marketer. In addition, each time a user is enrolled on OLS **140**, the values in fields **492** and **496**, which respectively represent the total number of users directed to OLS **140** by the co-marketer and the number of users directed to OLS **140** during the current month are incremented. Each record **480** also contains a field **494** representing the number of users that were directed to OLS by the co-marketer during the previous month. In a preferred embodiment of the present invention, the value stored in field **494** is used in step **285** in calculating the amount of the one time bounty payment to be paid to the co-marketer. More particularly, a higher one-time bounty payment will be paid to a co-marketer in step **285** if the number of prior enrollees represented in field **494** exceeds a predetermined threshold.

When a user reaches OLS site **128** from a previous location on WWW **120**, the user will typically be initially directed to the home page at web site **128**. In a first embodiment of the present invention described above in connection with FIG. **2**, the user may enroll on OLS **140** directly from the home page of site **128** upon reaching site **128**. In alternate preferred embodiments described below, the user may browse through the home web page of site **128**, and then through various further web pages at site **128**, prior to reaching an enrollment page at site **128** (e.g., WWW.OLS.COM\ . . . \ENROLL\ENROLL.P1) from which the user then enrolls onto OLS **140**. These alternate preferred embodiments are described respectively in connection with FIGS. **5** and **6**. Since the systems described in connection with FIGS. **5** and **6** permit a user to traverse multiple pages at site **128** prior to enrolling on OLS **140**, these systems function to preserve the UNIX symbolic link information originally passed to OLS site **128** from a prior web site as the user moves between web pages at site **128**.

Referring now to FIG. **5**, there is shown a schematic diagram illustrating the use of UNIX symbolic links and relative URL addressing for moving between page locations at OLS site **128**, in accordance with a preferred embodiment of the present invention. URL **502** points to the home page address of OLS site **128** on the WWW. URLs **504**, **506**, **508** also point to the home page address of OLS site **128** on the WWW; however, URLs **504**, **506**, **508** each include a UNIX symbolic link (/CM1, /CM2, /CM3) appended thereto. As described above, in the present invention, each UNIX symbolic link appended to a URL represents the identity of a co-marketer that directed a user to the home page address of OLS site **128**. When the user arrives at the home page of OLS site **128**, the user may then browse through various pages provided by OLS site **128** on the WWW. For example, the user may view pages providing information about OLS **140** by clicking on a "table of contents" entry on the home page of OLS site **128**. Upon clicking on this "table of contents" entry on the home page, the user is directed to a Table of Contents Page represented by URL **510**. From this Table of Contents Page, the user may click on individual pages (e.g., Info.P1, Info.P2, etc.) listed on the Table of Contents Page. Upon clicking on an individual page such as, for example, Information Page **1**, the user is directed to a first information page represented by URL **514**.

As described above in the background section, when relative URL addressing is used to move between pages on WWW **120**, a user may only move between pages in the user's current directory or to a subdirectory located below the user's current directory in a directory tree such as that shown in FIG. **5**. Thus, when standard relative URL addressing is used, it is not possible for a user to move from the page represented by URL **514** to the page represented by URL **518** and still preserve the UNIX symbolic link/CMID information described above. In the example shown in FIG. **5**, the page **514***a* represented by URL **514** contains a box giving the user an option to enroll on OLS **140**. In accordance with the present invention, if the user clicks on the "Enroll on OLS" box on page **514***a*, a special redirecting program (redirect.cgi) is triggered on web server **142** for redirecting the user from the page represented by URL **514** to the OLS enrollment page represented by URL **518**. A pseudo-code version of the redirect.cgi program is shown in Table I below:

TABLE I

```
main(input_parameters)
{ //last_url will hold the URL for the page the user was on
  //when they wanted to redirect upward. (for example
  //"http://www.ols.com/cm1/subdir1/subdir2/subdir3/info2.html")
  last_url = input_parameter[x];
  //destination will hold the page they want to redirect to.
  //It contains one or more "../" substrings.
  //(example. "../../subdirx/enroll.htm")
```

TABLE I-continued

```
destination = input_parameter[y];
//count_substrings() counts the number of substrings ("../")
//within the given string of characters (destination).
//In this example it would return the number "2".
number_of_levels_up = count_substrings("../", destination);
//remove_n_levels() takes a fully specified URL such as
//"http://www.ols.com/cm1/subdir1/subdir2/subdir3/page.htm"
//and removes a given number of directories and the page name.
//For example if number_of_levels_up is 2, the output from
//remove_n_levels(last_ur1,2) would be
//"http://www.ols.com/cm1/subdir1/"
new_directory = remove_n_levels(last_url, number_of_levels_up);
//get_relative_url() takes the given string and returns the portion
//after all of the "../" substrings. Thus in this example it returns
//"subdirx/enroll.htm"
relative_url = get_relative_url(destination);
//concatenate() takes 2 strings and splices the second one
//onto the back of the first. (in the example this yields:
//"http://www.ols.com/cm1/subdir1/subdirx/enroll.htm")
new_absolute_url = concatenate(new_directory, relative_url);
//redirect_browser() sends a "Hyper-Text Transfer Protocol (http)"
//message back to the user's web browser telling it to get the given URL.
redirect_browser(new_absolute_url);
}
```

Thus, the redirect.cgi program accepts as arguments the current URL of the user (e.g., URL **514**) and a destination URL representing the location to which the user desires to move (e.g., URL **518**). The program then strips the " . . . /Info/Info.P1" portion off of the current URL **514**, and replaces the striped portion with the " . . . /Enroll/Enroll.P1" portion of destination URL **518** to form a new URL which is then used for redirecting the user to the page represented by URL **518**. The redirect.cgi program is significant to the operation of the present invention because, among other things, this program allows the UNIX symbolic link information that was originally passed when the user arrived at the home page of OLS site **128** to be retained as the user moves between pages at OLS site **128**. Thus, the redirecting.cgi program insures that the UNIX symbolic link information provided by a co-marketer will be present when the enrollment means **145** attempts to enroll the user on OLS **140**.

The redirect.cgi program discussed in connection with FIG. **5** and Table I above represents a first preferred system for retaining at site **128** the UNIX symbolic link information (that was originally passed when the user originally arrived at OLS site **128** from a previous site) as the user moves between web pages at OLS site **128**. In accordance with an alternative preferred embodiment of the present invention, a further system (described in connection with FIG. **6** and Table II below) may alternatively be used to store and transmit the UNIX symbolic link information that was originally passed when the user arrived at the home page of OLS site **128**. In this alternate embodiment, the URL used to direct a user from a previous site (e.g., **122***a*, **122***b*, **122***c*) to OLS site **128** includes a string which functions to call a special page_link.cgi program which runs on web server **142**. The string passed to OLS site **128** also contains (i) a destination page identifier (or filename) representing the particular web page at site **128** to which the user has been directed by the previous web site, and (ii) a UNIX symbolic link or CMID code associated with the previous web site. More particularly, the destination page identifier and the UNIX symbol link information/CMID code are included in the string as arguments to the page_link.cgi program An exemplary URL which invokes the page_link.cgi program and that could be used by co-marketer site **122***a* for directing a web user from a site **122***a* to the home page of site **128** is shown below:

WWW.OLS.COM\page_link.cgi?index@CM1

The first portion (i.e., WWW.OLS.COM) of this exemplary URL identifies web site **128** as the web site to which the user is being directed. The remaining portion (i.e., page_link.cgi?index@CM1) of the URL represents a call to the page_link.cgi program. The program call includes two arguments, namely, a destination page identifier (i.e., index) representing the particular page at site **128** to which the user has been directed, and a UNIX symbolic link/CMID code (i.e., CM1) representing the identity of the web site **122***a* that directed the user to site **128**.

Referring now to FIG. **6**, there is shown a flow diagram of a system **600** for implementing the page_link.cgi program In step **610**, when web server **142** receives a URL which includes a string containing a call to the page_link.cgi program, the page_link.cgi program is invoked on the web server **142**. Next, in step **620**, the page_link.cgi program extracts the destination page identifier (e.g., index) and UNIX symbolic link/CMID code (e.g., CM1) that were contained as arguments in the page_link.cgi program call. Next, the page at web site **128** represented by the destination page identifier is retrieved. Each page at web site **128** is represented by a file which includes one or more fields containing further URLs representing links to other pages at web site **128** (internal page links) or to pages at web sites other than site **128** (external page links). Each URL in the destination page is then selected and tested (in steps **630** and **640**) in order to determine whether the URL includes a string for calling the page_link.cgi program. If the URL does include the "page_link.cgi" string, a further determination is made (in step **650**) whether the URL represents an internal or external page link. In this step, the URL will be determined as representing an internal page link if the first portion of the URL represents OLS site **128** (i.e., "WWW.OLS.COM") or if there is no site name portion in the URL; otherwise the URL will be determined as representing an external page link. Next, in step **660**, for each internal URL in the destination page which includes a string for calling the page_link.cgi program, the page_link.cgi program appends the UNIX symbolic link/CMID code (i.e., CM1) originally passed as an argument to the program to the end of the URL. In addition, in step **670**, for each external URL in the destination page which includes the "page_link.cgi" string, the page_link.cgi program appends the UNIX symbolic link/CMID originally passed to the program followed by a UNIX symbolic link/CMID representing OLS site **128** (e.g., /OLS) to the end of the URL. The process is then repeated from step **630** for each URL on the destination page. The destination page, which includes URLs having the appended codes described above is then passed back to the user in step **690**. Thereafter, when the user desires to move off of the destination page (passed to the user in step **690**), the user will select one of the URL page links on the user's page as a new destination page. If the URL corresponding to this new destination page contains a call to the page_link.cgi program described above, the process described above is repeated from step **610** using the URL of the new destination. A pseudo-code listing of an exemplary web page file and of the page_link.cgi program are shown below in Table II:

TABLE II

```
**WEB PAGE FILE PSEUDO CODE**
<HTML>
<HEAD>
<TITLE>Online Service Home Page</TITLE>
</HEAD>
<BODY>
<A HREF="http://www.ols.com/cgi-bin/page_link.cgi?enroll&CM1">
Enroll page on OLS
140</A>
<A HREF="http://www.other.com/">Visit another
company's web pages</A>
<A HREF="http://www.cm.com/cgi-bin/page_link.cgi?
index&CM1&OLS">Maintain comarketer info and visit another site</A>
</BODY>
</HTML>
**PAGE LINK CGI PSUEDO CODE**
PageLink (URL) {
 get destinationPageName and CMID_string from URL
 //assuming the following URL:
 //"http://www.ols.com/cgi-bin/page_link.cgi?index&CM1"
 //destinationPageName is index, as it follows "page_link.cgi?"
 //and the CMID_string is "CM1", as it follows the
 //destinationPageName (and is separated by a "&").
 //
 //CMID_string consists of one or more comarketer codes
 //separated by "&" characters, and records the path taken
 //by the user through web sites which employ this tracking
 //system
 put contents of page named destinationPageName into destinationPage
 for each URL in destinationPage
 {
  if URL contains page_link.cgi call and refers to an internal URL
  {
   //if there is no site name or if the site name matches
   //this on-line service's, the URL is internal
   append CMID_string to URL
  }
  else if URL contains page_link.cgi call and is an external URL
  {
   //if there is a site name and it does not match that of OLS 140,
   //the URL is external
   append CMID_string to URL
   append OLS_string to URL
   //OLS_string refers to the CMID code of
   //the site running this instance of the page_link.cgi
   //application, and is unique among all sites participating.
  }
  //note that nothing is done to URLs which do not refer to
  //the page_link.cgi application, since no comarketer code
  //tracking is done when users follow these links
 }
 send page
}
```

In the embodiment shown in FIG. **6** and described above, each page link URL on a web page at site **128** will preferably include a call to the page_link.cgi program if the page link points to either (i) a further web page at site **128**, or (ii) a further web site which is adapted to recognize UNIX symbolic links that have been inserted into a URL by a previous web site during a user session. By inserting the page_link.cgi program call and UNIX symbolic link information into each page link that points to a further web page at site **128**, the system insures that the UNIX symbolic link information originally passed to site **128** by a previous web site will be available when OLS **140** attempts to enroll the user into OLS **140**. In addition, by inserting the UNIX symbolic link information associated with both a previous web site **122***a, b, c* and OLS site **140** into page links associated with different web sites (other than site **128**), the system permits the user to carry UNIX symbolic link information representing previous location(s) traversed during a user session to further web sites.

Referring now to FIG. **7**, there is shown a flow diagram illustrating the operation of a system **700** for generating recurring bounty payment records, in accordance with a preferred embodiment of the present invention. In addition to providing each co-marketer with a one-time bounty payment each time a user directed to OLS **140** by the co-marketer enrolls on OLS **140**, billing means **143** also generates "recurring" bounty payment records for certain selected co-marketers that have secured a preferred status with OLS **140**. Information representing whether or not a particular co-marketer has such preferred status (and is thus eligible to receive a recurring bounty payment) is stored in field **490** of records **480**. As shown in system **700**, a recurring bounty payment is determined for each preferred co-marketer on a periodic basis based on the number of users that were referred to OLS **140** by the co-marketer (at any time) and which are still active subscribers on OLS **140**.

Referring still to FIG. **7**, in step **710** a counter used for determining the total number of active users associated with each co-marketer is initialized, preferably to zero. Next, in step **720** a co-marketer record **480** having a preferred status (as indicated by field **490**) is selected for processing. Next, a user record **450** having the same CM ID (as indicated by field **454**) as that of the selected co-marketer is selected for processing. If field **470** of the selected user record indicates that the selected user is still an active user and the user has been an active user on OLS **140** for at least 90 days (as indicated by field **476**), then processing proceeds to step **750** where the recurring user counter is incremented. Next, in step **760**, the process is repeated from step **730** until each user record **450** having the same CM ID as the selected co-marketer has been processed. Thereafter, in step **770**, the billing means **143** generates a recurring bounty payment for the selected co-marketer by multiplying a value represented by the recurring user counter with a per user bounty amount. Finally, in step **780**, the process is repeated from step **710** until each co-marketer having a preferred status has been processed.

In an alternate preferred embodiment of the present invention (not shown), the value stored in field **492** may be used by system **700** (at step **770**) in calculating the rate of each recurring bounty payment to be paid to each preferred co-marketer. More particularly, a higher recurring bounty payment rate may be paid to a co-marketer if the value of enrollees represented in field **492** exceeds a predetermined threshold.

Furthermore, it is to be understood that although the present invention has been described with reference to a preferred embodiment, various modifications, known to those skilled in the art, may be made to the structures and process steps presented herein without departing from the invention as recited in the several claims appended hereto.

What is claimed is:

1. A method for redirecting a user operating on a user station from a first location on a world wide web (WWW) to a second location on said WWW, wherein relative universal resource locator (URL) addressing is used during said redirecting process, comprising the steps of:

(A) receiving a signal from said first location indicating that said user wishes to move from said first location on said WWW to said second location on said WWW;

(B) passing, in response to said signal, a current URL representing an address of said first location on said WWW and a destination URL portion representative of an address of said second location on said WWW to a redirecting means, said current URL having first and second portions;

(C) forming a destination URL, with said redirecting means, by substituting said destination URL portion in

place of said second portion in said current URL, wherein said destination URL represents a relative address of said second location on said WWW; and

(D) moving said user from said first location on said WWW to said second location on said WWW in accordance with said destination URL formed in step (C);

wherein said destination URL includes a symbol representing a prior WWW site traversed by said user before said user reached said second location, said second location being on a subsequent WWW site, said subsequent WWW site being different from said prior WWW site, said prior WWW site being different from said user station, said subsequent WWW site being different from said user station.

2. The method of claim 1, wherein said destination URL portion recited in step (B) is formed from a directory identifier associated with said second location.

3. The method of claim 2, wherein said first portion of said current URL recited in step (B) is formed from a web page address identifier associated with said first and second locations.

4. The method of claim 3, wherein said first portion of said current URL recited in step (B) is further formed of a UNIX symbolic link representing a prior WWW location traversed by said user before said user reached said first location on said WWW.

5. The method of claim 4, wherein said prior WWW location represents a co-marketer of on-line services on said WWW and said web page identifier is associated with an on-line service on said WWW.

6. The method of claim 5, further comprising the step of:

(E) using, at said second location, said UNIX symbolic link to pay a bounty to said co-marketer.

7. An apparatus for redirecting a user operating on a user station from a first location on a world wide web (WWW) to a second location on said WWW, wherein relative universal resource locator (URL) addressing is used during said redirecting, comprising:

(A) means for receiving a signal from said first location indicating that said user wishes to move from said first location on said WWW to said second location on said WWW;

(B) means for passing, in response to said signal, a current URL representing an address of said first location on said WWW and a destination URL portion representative of an address of said second location on said WWW to a redirecting means, said current URL having first and second portions;

(C) said redirecting means including means for forming a destination URL by substituting said destination URL portion in place of said second portion in said current URL, wherein said destination URL represents a relative address of said second location on said WWW; and

(D) means for moving said user from said first location on said WWW to said second location on said WWW in accordance with said destination URL formed by said redirecting means;

wherein said destination URL includes a symbol representing a prior WWW site traversed by said user before said user reached said second location, said second location being on a subsequent WWW site, said subsequent WWW site being different from said prior WWW site, said prior WWW site being different from said user station, said subsequent WWW site being different from said user station.

8. The apparatus of claim 7, wherein said destination URL portion is formed from a directory identifier associated with said second location.

9. The apparatus of claim 8, wherein said first portion of said current URL is formed from a web page address identifier associated with said first and second locations.

10. The apparatus of claim 9, wherein said first portion of said current URL is further formed of a UNIX symbolic link representing a prior WWW location traversed by said user before said user reached said first location on said WWW.

11. The apparatus of claim 10, wherein said prior WWW location represents a co-marketer of on-line services on said WWW and said web page identifier is associated with an on-line service on said WWW.

12. The apparatus of claim 11, further comprising:

(E) bounty payment means, responsive to said UNIX symbolic link, for paying a bounty to said co-marketer.

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